

**10/529691**

U.S. National Phase PCT/KR2003/002121

**JC17 Rec'd PCT/PTO 29 MAR 2005**

**IN THE CLAIMS:**

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 2, 4-7, 9-12, 14, 16, 17, 19-26, 29, 30, 32 and 33 in and add new claims 34-41 in accordance with the following:

1. **(currently amended)** A write once disc ~~that is having~~ a single record layer disc in which a lead-in area, a data area, and a lead-out area are sequentially disposed, the disc comprising a defect management area (DMA) that is present in at least once in one of the lead-in area ~~and or~~ the lead-out area,  
wherein defect information and defect management information are repeatedly recorded in the DMA according to a recording operation.
2. **(currently amended)** The disc of claim 1, wherein a plurality of the DMAs are ~~formed in an area~~ present.
3. **(original)** The disc of claim 1, wherein the defect information and the defect management information are continuously updated and recorded until the DMA has no room for recording.
4. **(currently amended)** The disc of claim 1, wherein:  
the data area comprises a user data area and a spare area; and  
~~the an~~ an address of data that is most recently recorded in ~~a the~~ a user area of ~~a the~~ a record layer and ~~the an~~ an address of replacement data that is most recently recorded in ~~a the~~ a spare area of the record layer are recorded in the DMA.
5. **(currently amended)** The disc of claim 1, wherein a pointer pointing out ~~the a~~ position of the defect information is recorded in the DMA.
6. **(currently amended)** The disc of claim 1, wherein the defect management information ~~corresponding to~~ corresponds to the defect information, ~~which is recorded per identified during a recording operation, is recorded in the DMA operation.~~
7. **(currently amended)** The disc of claim 1, wherein the defect information for a defect contains state information specifying ~~the a~~ a state of ~~a the~~ a defect, a pointer pointing out ~~the a~~ position of the defect, and a pointer pointing out ~~the a~~ a position of a replacement for the defect.
8. **(original)** The disc of claim 7, wherein the state information indicates whether the defect is a continuous defect block or a single defect block.

9. **(currently amended)** The disc of claim 7, wherein:  
the state information indicates that the defect is a continuous defect block, and  
corresponding pointers for the defect and the replacement point out ~~the starts~~ a start of  
the defect and a start of the replacement, respectively.

10. **(currently amended)** The disc of claim 7, wherein:  
the state information indicates that the defect is a continuous defect block, and  
corresponding pointers for the defect and the replacement point out ~~the ends~~ an end of  
the defect and an end of the replacement, respectively.

11. **(currently amended)** A double record layer write once disc ~~that is a double record layer disc~~ having a first record layer in which a lead-in area, a data area, and an outer area are sequentially located and a second record layer in which an outer area, a data area, and a lead-out area are sequentially located, the disc comprising a defect management area (DMA) that is present ~~in~~ at least once one of the lead-in area, the lead-out area, or the outer area,  
wherein defect information and defect management information are repeatedly recorded in the DMA according to a recording operation.

12. **(currently amended)** The disc of claim 11, wherein a plurality of the DMAs are present ~~in a~~ in area.

13. **(original)** The disc of claim 11, wherein the defect information and the defect management information are continuously updated and recorded until the DMA has no room for recording.

14. **(currently amended)** The disc of claim 11, wherein:  
each data area comprises a user data area and a spare data area; and  
~~the addresses of data and replacement data~~ data, which are most recently recorded in the  
user areas and the spare areas of the record layers, respectively, are recorded in the DMA.

15. **(original)** The disc of claim 11, wherein a pointer pointing out the position of the defect information is recorded in the DMA.

16. **(currently amended)** The disc of claim 11, wherein the defect management information ~~corresponding~~ corresponds to the defect information, ~~which is recorded per recording operation, is recorded in the DMA~~ identified during a recording operation.

17. **(currently amended)** The disc of claim 11, wherein the defect information includes state information regarding a defect, a pointer pointing out ~~the~~ a position of the defect, and a pointer pointing out ~~the~~ a position of a replacement for the defect.

18. **(original)** The disc of claim 17, wherein the state information indicates whether the defect is a continuous defect block or a single defect block.

19. **(currently amended)** The disc of claim 17, wherein:  
the state information specifies that the defect is a continuous defect block, and  
corresponding pointers for the defect and the replacement point out ~~the starts~~ a start of the defect and a start of the replacement, respectively.

20. **(currently amended)** The disc of claim 17, wherein:  
the state information specifies that the defect is a continuous defect block, and  
corresponding pointers for the defect and the replacement point out ~~the ends~~ an end of the defect and an end of the replacement, respectively.

21. **(currently amended)** A method of managing disc defects in a disc, comprising:  
recording defect information regarding user data, which is recorded in a user data area of the disc according to a first recording operation, ~~as a plurality of first defect information in a defect management area (DMA) that is present in~~ at least once in one of a lead-in area and or a lead-out area of the disc;

recording management information for managing the first defect information as first defect management information in the DMA; and

repeating recording of the first defect information and recording of the first defect management information at least once while increasing indexes given to the recording operation, defect information, and defect management information by 1.

22. **(currently amended)** The method of claim 21, wherein the repeating of the recording of the first defect information and the recording of the first defect management information is performed until the DMA has no room for recording.

23. **(currently amended)** The method of claim 21, wherein during the recording of the first defect information, the defect information is sequentially recorded in a defect information area included in the DMA, starting from ~~the~~ a start of the defect information area toward ~~its~~ an end of the defect information area.

24. **(currently amended)** The method of claim 21, wherein during the recording of the first defect management information, the defect management information is sequentially recorded in a defect information management area included in the DMA, starting from ~~the~~ a start of the defect information management area toward ~~its~~ an end of the defect information management area.

25. **(currently amended)** The method of claim 21, wherein during the recording of the first defect information, the defect information is sequentially recorded in ~~the~~ a defect information area included in the DMA, starting from ~~the~~ an end of the defect information area toward ~~its~~ a start of the defect information area.

26. **(currently amended)** The method of claim 21, wherein during the recording of the first defect management information, the defect management information is sequentially recorded in ~~the~~ a defect information management area included in the DMA, starting from ~~the~~ an end of the defect information management area toward ~~its~~ a start of the defect information management area.

27. **(original)** The method of claim 21, wherein during the recording of the first defect information and the recording of the first defect management information, the corresponding defect information and defect management information are sequentially recorded to form a pair in the defect management area, starting from the start of the defect management area.

28. **(original)** The method of claim 21, wherein during the recording of the first defect information and the recording of the first defect management information, the corresponding

defect information and defect management information are sequentially recorded to form a pair in the defect management area, starting from the end of the defect management area.

29. **(currently amended)** The method of claim 21, wherein during the recording of the first defect information comprises:

~~recording data in predetermined units;~~

verifying the recorded user data to detect an area of the disc with a defect;

storing information, which designates the area with the defect as a defective area, and information, which designates a replacement area that is a replacement for the defective area, as the first defect information in memory; and

~~repeating recording of data, verifying the recorded data, and storing of the first defect information at least once; and~~

reading the first defect information from the memory and recording the read information as the first defect information in the DMA.

30. **(currently amended)** A recording apparatus comprising:

a recording/reading unit that records data on or reads data from a disc; and

a controller that controls the recording/reading unit to repeatedly record defect information regarding data, which is recorded in a data area of the disc per recording operation, as defect information in a defect management area (DMA) that is present at least ~~once in one of~~ a lead-in area ~~and or~~ a lead-out area of the disc, and record management information for managing the defect information as defect management information in the DMA.

31. **(original)** The recording apparatus of claim 30, wherein the controller controls the recording/reading unit to record the defect information and defect management information per recording operation in the DMA until the DMA has no room for recording, and informs a user that disc defect management cannot be further performed when the DMA has no room for recording.

32. **(currently amended)** A recording apparatus comprising:

a recording/reading unit that records data on or reads data from a disc; and

a controller that controls the recording/reading unit to record defect inform regarding data, which is recorded in a data area of the disc according to a first recording operation, as a plurality of first defect information in a defect management area (DMA) that is present in at least

~~once in one of~~ a lead-in area ~~and or~~ a lead-out area of the disc, record management information for managing the first defect information as first defect management information in the DMA, record defect information regarding data, which is recorded in the data area according to a second recording operation, as a plurality of second defect information in the DMA, and record management information for managing the second defect information as second defect management information in the DMA.

33. **(original)** The recording apparatus of claim 32, wherein the controller controls the recording/reading unit to record data in the data area while increasing indexes given to the recording operation, defect information, and defect management information by 1, until the DMA has no room for recording, and informs a user that disc defect management cannot be further performed when the DMA has no room for recording.

34. **(new)** The method of claim 29, further comprising:  
recording additional user data in the user data area;  
verifying the recorded additional user data to detect an area of the disc having a defect in the additional user data;  
storing information, which designates the area with the disc having a defect in the additional user data as another defective area, and information, which designates a replacement area that is a replacement for the another defective area, as the additional defect information in memory; and  
reading the first defect information and the additional defect information from the memory and recording the read information in the DMA.

35. **(new)** A method of managing defects on a write once disc, the method comprising:  
recording first data on the disc in predetermined units;  
detecting an area of the disc with a first defect;  
storing first defect information in a memory, the first defect information designating the area of the disc with the first defect as a first defective area and designating a first replacement area that is a replacement for the first defective area; and  
reading the stored defect information from the memory and recording the read information in a defect management area of the disc.

36. **(new)** The method of claim 35, further comprising:  
detecting a second defect in the first data; and  
storing second defect information in the memory, the second defect information designating the area of the disc with the second defect as a second defective area and designating a second replacement area as a replacement area for the second defective area, wherein:

the read information recorded in the defect management area of the disc comprises the first defect information and the second defect information.

37. **(new)** The method of claim 35, further comprising:  
recording second data on the disc;  
detecting a defect in the second data; and  
storing second defect information in the memory, the second defect information designating the area of the disc with the defect in the second data as a second defective area and designating a second replacement area as a replacement area for the second defective area, wherein:

the read information recorded in the defect management area of the disc comprises the first defect information and the second defect information.

38. **(new)** The method of claim 35, further comprising:  
reading the recorded defect information from the disc and storing the recorded defect information in the memory;  
recording second data on the disc;  
detecting a defect in the second data; and  
storing second defect information in the memory, the second defect information designating the area of the disc with the defect in the second data as a second defective area and designating a second replacement area as a replacement area for the second defective area; and  
storing the second defect information and the defect information read from the disc in the defect management area independently of the defect information read from the disc.

39. **(new)** The method of claim 37, wherein the first and second data are recorded in a same recording operation.



40. (new) The method of claim 37, wherein the first and second data are recorded in independent recording sessions.

41. (new) The method of claim 35, wherein one or more copies of the first defect information are stored on the disc together with the defect information.